

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/GB2004/001596

International filing date (day/month/year)
13.04.2004

Priority date (day/month/year)
10.04.2003

International Patent Classification (IPC) or both national classification and IPC
H01S5/068

Applicant
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1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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ATTACHMENT G

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITYInternational application No.
PCT/GB2004/001596

JC20 Rec'd PCT/PTO 07 OCT 2005

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2004/001596

Box No. II Priority

1. ☒ The following document has not been furnished:

- ☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).
- ☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-2
Inventive step (IS)	Yes: Claims	
	No: Claims	1-10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VI Certain documents cited

1. Certain published documents (Rules 43*bis*.1 and 70.10)

and / or

2. Non-written disclosures (Rules 43*bis*.1 and 70.9)

see form 210

**WRITTEN OPINION OF THE
 INTERNATIONAL SEARCHING
 AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/GB2004/001596

The following documents are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: GB 2 381 121 A
 D2: US2003/007526 A1
 D3: US2001/017876 A1
 D4: EP 0 516 398 A

1. Independent claim 1 does not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined:
 - 1.1 The expression "section currents/voltage" is unclear and not precisely defined and leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of claim 1 unclear. It is not clear which section this expression refers to.
 - 1.2 The following feature "taking into account the laser's output wavelength dependency on temperature and section currents/voltage" in the apparatus claim 1 is defined in terms of a method step instead of clearly defining the apparatus in terms of its technical features. The intended limitations are therefore not clear from this claim, contrary to the requirements of Article 6 PCT.
 - 1.3 The following expression "whereby the output wavelength may be kept at the desired operating values without any significant mode jump whatever the temperature of operation within the laser's operative range" attempts to define the subject-matter of independent claim 1 in terms of the result to be achieved, which merely amounts to a statement of the underlying problem, without providing the technical features necessary for achieving this result.
 The laser of independent claim 1 should have been defined in terms of its technical features to meet the requirements of Article 6 PCT.
 - 1.4 The expressions "the currents" and "the voltages" are unclear because they have no well defined antecedent. It should have been mentioned which currents and voltages these expressions refer to.

2. Furthermore, the above-mentioned lack of clarity notwithstanding, the present application does not meet the requirements of Article 33(1) PCT, because the subject-matter of independent claim 1 is not new in the sense of Article 33(2) PCT.

Documents D2 and D3 anticipate the subject-matter of claim 1.

3. Furthermore, the above-mentioned lack of clarity notwithstanding, the present application does not meet the requirements of Article 33(1) PCT, because the subject-matter of independent claim 1 does not involve an inventive step in the sense of Article 33(3) PCT:

Documents D4 (abstract, claim 1) discloses "a tuneable LED apparatus comprising a tuneable LED, a thermal sensor and a controller, said controller controlling at least one or a combination of the following variables: the currents, the voltages, a tuning section, and a phase section; and incorporating means which adjust any appropriate one or a combination of said variables taking into account the laser's output wavelength dependency on temperature and section currents/voltage, whereby the output wavelength may be kept at the desired operating value without any significant mode jump whatever the temperature of operation within the laser's operative range".

The subject-matter of claim 1 differs from the apparatus of D4 in that the light emitting element which is comprised in the apparatus is a laser instead of a LED.

However, replacing an LED by a laser diode is an obvious design possibility for the person skilled in the art, depending on the operational requirements.

Therefore the skilled person would arrive at the subject-matter of claim 1 without the use of inventive skills.

4. Dependent claim 2 does not contain any features, which in combination with the features of any claim to which it refers, meet the requirements of the PCT in respect of novelty:

Documents D2 and D3 disclose the additional feature of claim 2 (no close loop temperature control means).

**WRITTEN OPINION OF THE
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International application No.

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5. Dependent claims 2-10 do not appear to contain any feature, which in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step:
 - 5.1 Document D4 discloses the additional feature of claim 2 (no close loop temperature control means).
 - 5.2 The use of a low pass filter for removing rapidly changing signals (claim 3) is of common practice in the field of feedback regulation.
 - 5.3 The choice of the laser type between DBR laser, DFB laser, SG-DBR laser, SSG-DBR laser and vertical cavity filter laser (claims 4-8) is an obvious design possibility which lies in the expertise of the skilled person, depending on the operational requirements.
 - 5.4 The additional features of claims 6-10 do not appear to solve any particular problem in an inventive way (tuneability mapping in controllers and use of wavelength control signals are disclosed in documents D2, D3, D4).